CHINESE MACHINE TOOL MARKET - WEEKLY BULLETIN

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'Technology' is buzzword for manufacturers

Under dazzling lights, 24 robots "danced" in tune to music alongside human performers in an eight-minute, high-tech show during the closing ceremony of the 2018 Winter Olympics in Pyeongchang, South Korea Republic, in the late of February.

The robots that appeared in the show were all made by *Siasun Robot and Automation*, a typical example of China's growing ranks of manufacturers that are moving up the industry chain.

Siasun, based in Shenyang, Liaoning province, conducts research and development of industrial robot applications, automatic assembly and production lines.

"The biggest difficulty was that the robots were expected to perform a variety of complicated moves and be in sync with the performers, lights and music," said Zhang Lei, who develops mobile robots for Siasun. "We made it happen by using cutting-edge computer vision technology and laser guidance systems."

The technologies used in the show are already helping Chinese factories boost efficiency. They are part of the country's broader push to marshal its high-end manufacturing power, as the world's second-largest economy scrambles to embrace technology and upgrade its sprawling industries.

With significant progress already made, China will breathe new life into Made in China 2025 — its ambitious 10-year strategy to upgrade and transform Chinese manufacturing — in the hope of shoring up weaknesses in major equipment manufacturing and become a global manufacturing giant.

China will promote the development of integrated circuits, 5G mobile communications, aircraft engines, new energy vehicles, and new materials, Premier Li Keqiang said in this March when delivering the Government Work Report at the opening of the first session of the 13th National People's Congress, the top legislature.

According to Li, the central government will also cultivate globally competitive industrial internet-of-things platforms and set up innovation demonstration zones.

The Made in China 2025 strategy, rolled out in 2015, aims to turn China into a global leader in manufacturing, with increasing investment in research and development as well as application of cutting-edge technologies.

Minister of Industry and Information Technology (MIIT), Miao Wei said the government has completed the top-level design of the grand plan.

"Concrete steps have also been taken in the past two years to implement the strategy, with significant progress in core technologies and overall manufacturing quality," Miao said.

One of the bright spots is the maiden flight of the country's first homegrown large passenger aircraft, the C919. The narrow-body jet underlines the country's ambitious commercial aviation program, and it is set to provide a major impetus to domestic airplane manufacturing.

This year, the C919 will enter the phase of obtaining airworthiness certification in China after achieving a number of milestones in the past year, including the successful flights of two test aircraft, among the six planned in total, according to Wu Guanghui, chief designer of the C919, on the sidelines of the annual NPC session.

When it comes to robotics technology, domestic companies have also made strides in both quantity and quality. In 2017, China produced more than 120,000 industrial robots, a surge of 68 percent year-on-year.

More importantly, the country has beefed up its capability to produce reliable speed reducers, servomotors and control panels, which are the three basic building blocks of sophisticated automated machines. The progress reduces China's heavy reliance on foreign suppliers for these key robotic components.

Wang Jiegao, chief engineer of Estun Automation and general manager of subsidiary Estun Robotics, said the company can produce over 100,000 servomotors a year,

Haier, the country's largest home appliance manufacturer, is already marching ahead in that direction. The company has built an industrial internet system, or a network of machines with internet-connected sensors and industrial apps, which collect and analyze data from consumers, suppliers and factories.

The system, CosmoPlat, is designed to allow companies to customize products at speed and scale while boosting productivity and cutting costs.

It garnered 320 million users and 3.9 million enterprises last year, covering electronics, textiles, equipment, construction, transportation and chemical engineering. Based on the open platform, Haier has also launched nine internet-based smart factories, with a target of establishing 12 more this year.

"The most important characteristics of the internet era are the zero-distance relationship with consumers," said Zhang Ruimin, chairman and CEO of Haier, highlighting the importance of integrating users and enterprises in the age of new manufacturing.

For a world plagued by protectionism, China shows how to share success

As a senior banking executive, David Li has already witnessed dramatic changes in China since its opening up decades ago.

After hearing the government work plans this year, the chairman and chief executive officer of J.P. Morgan China was still excited about new measures to further open the world's second-largest economy to overseas investors.

"We are excited about the opportunities to be created in China's development in a 'new era'," said Li, who just started his second five-year term as a national political advisor.

Li is in Beijing for the ongoing annual sittings of the national legislature and the top political advisory body. The meetings of more than 2,100 national political advisors and about 3,000 legislators are crucial venues where political and economic developments are reviewed and discussed, and key policies and laws adopted.

The 19th National Congress of the Communist Party of China last October said the country is entering a new era, with comprehensive opening-up as an important goal. To that end, the government has formulated new policies and put them high on the agenda.

The country will open its doors wider to foreign investors and further liberalize and facilitate trade and investment, Premier Li Keqiang said on March 5 while delivering the Government Work Report in front of thousands of lawmakers and political advisors.

China will open up bank card clearing, remove restrictions on the operational scope of insurance agencies, and ease or cancel limits on foreign holdings in companies in banking, securities, funds, futures, and financial asset management.

For David Li, the measures will be beneficial for the bank's business in this strategically significant market. The company will continue to strengthen its position in China, he said.

Chase Manhattan Corporation, the predecessor of JPMorgan Chase, set up an office in Beijing in 1983, betting on the potential of the world's most populous country which had shut out foreign businesses for decades but was changing rapidly.

The return has been fruitful: the bank became the first foreign lender able to register in Beijing 24 years later and has now extended its business to major cities including Shanghai, Shenzhen, and Suzhou.

The bank was among hundreds of thousands of foreign businesses from across the world that sought opportunities in the modernization and transition of the country. From carmakers to internet companies, numerous bold and farsighted investors reaped huge benefits.

China will open up its general manufacturing sector and expand foreign investment access to sectors like financial services, telecommunications, medical services, education, elderly care, and new-energy vehicles, according to the Government Work Report.

Some 35,652 foreign-funded businesses were established and foreign direct investment in the Chinese mainland hit an all-time high of 878 billion yuan (around $140 billion) last year against a grim global climate.

Analysts believe more measures are in the pipeline. The negative list that determines where foreign participation is prohibited or limited is expected to become shorter. Foreign investors will see more favorable policies in taxation, less red tape in investment approval, and stronger protection of intellectual property rights.

Ahead of the 40th anniversary of the reform and opening-up this year, China's move set an example for a world plagued by protectionism and showed the willingness to share its success with the rest of the world.

The Belt and Road Initiative, which aims to build trade and infrastructure networks connecting Asia with Europe and Africa and promote industrial cooperation, has emerged as an important means to seek reciprocal development.

From infrastructure builders to financiers, Chinese businesses are looking for win-win opportunities in countries and regions along the routes.

"Our business strategy must fit into the development of host countries and address their problems," said Zou Lei, national political advisor and chairman of Dongfang Electric Corp.

With leading clean energy technology, the power generator manufacturer helped build green and efficient power plants in less prosperous countries in Africa, Southeast Asia, and other parts of the world. A Dongfang Electric-contracted 1.87-gigawatt hydropower station doubled Ethiopia's power generation, solving the electricity shortage and bolstering the local economy.

Dongfang Electric will partner with global peers to increase its presence in the Belt and Road regions, Zou said.

China's non-financial investment to economies involved in the Belt and Road Initiative totaled $14.4 billion last year, up from 8.5 percent in 2016.

Foreign investment sees growth momentum

Foreign direct investment into the Chinese mainland from Singapore, South Korea and the United States jumped 62.9 percent, 171.9 percent and 56.8 percent year-on-year respectively in the first two months of 2018, the Ministry of Commerce said on March 13th.

FDI into the Chinese mainland rose 0.5 percent year-on-year to reach 139.4 billion yuan ($22.1 billion) from January to March, while the number of newly-established foreign companies soared to 8,848, leaping 129.2 percent on a year-on-year basis.

Capital inflow from the Association of Southeast Asian Nations and economies related to the Belt and Road Initiative into the Chinese mainland also surged 76.9 percent and 75.7 percent respectively from the same period last year.

Under the government plan, the general manufacturing sector will be completely opened up, and access to sectors such as telecommunications, medical services, education, elderly care and new-energy vehicles will be expanded this year.

China will also phase in an opening-up of bank card clearing and other markets; lift restrictions on the scope of operations of foreign-invested insurance companies, and ease or lift restrictions on the share of foreign-owned equity in companies in sectors including banking, securities, fund management and futures.

Foreign capital inflow in the high-tech manufacturing sector rose 27.9 percent year-on-year, accounting for almost a fifth of the total FDI in the first two months, while a total of 12.7 billion yuan was attracted by the high-tech service industry, official data show.

As FDI into China reached $136.3 billion, breaking a historical high in 2017, Huang Maoxing, a deputy to the 13th National People's Congress and an economics professor at Fujian Normal University, said foreign companies still see China as a priority investment destination because of its enormous consumption power supported by the country's population size.

"China has always been conducting favorable policies and it will further enhance its appeal to foreign investors, thereby combating the decline in advantages China used to have and the fierce competition for foreign investment from other countries," he said.

Eager to diversify the country's development capabilities, the Ministry of Commerce pledged to further facilitate foreign investment, including granting pre-establishment national treatment to foreign companies and implementing the negative list management system in 2018.

China's industrial output expands 7.2% in Jan.- Feb.

China's industrial output expanded at 7.2 percent year on year in the first two months, accelerating from 6.2 percent growth in December 2017, official data showed on March 14.

The growth was faster than the 6.3 percent growth during the same period last year, the National Bureau of Statistics (NBS) said in a statement.

Industrial structure continued to improve, with production in high-tech industries and the equipment manufacturing sector expanding by 11.9 percent and 8.4 percent, respectively.

Industrial output, officially called industrial value added, is used to measure the activity of designated large enterprises with annual turnover of at least 20 million yuan ($3 million).

Output of new energy vehicles saw a surge of 178.1 percent year on year during the period, while industrial robot production jumped by 25.1 percent, NBS data showed.

While such rapid growth was partly due to a low comparable base, it indicated that emerging sector expansion is accelerating, according to NBS spokesperson Mao Shengyong.

The mining sector grew by a modest 1.6 percent year on year, lagging behind the 7-percent growth achieved by the manufacturing sector.

Amid the drive to restructure and optimize industry, the country aims to reduce overcapacity in traditional sectors such as coal, iron, and steel while facilitating growth in emerging areas.

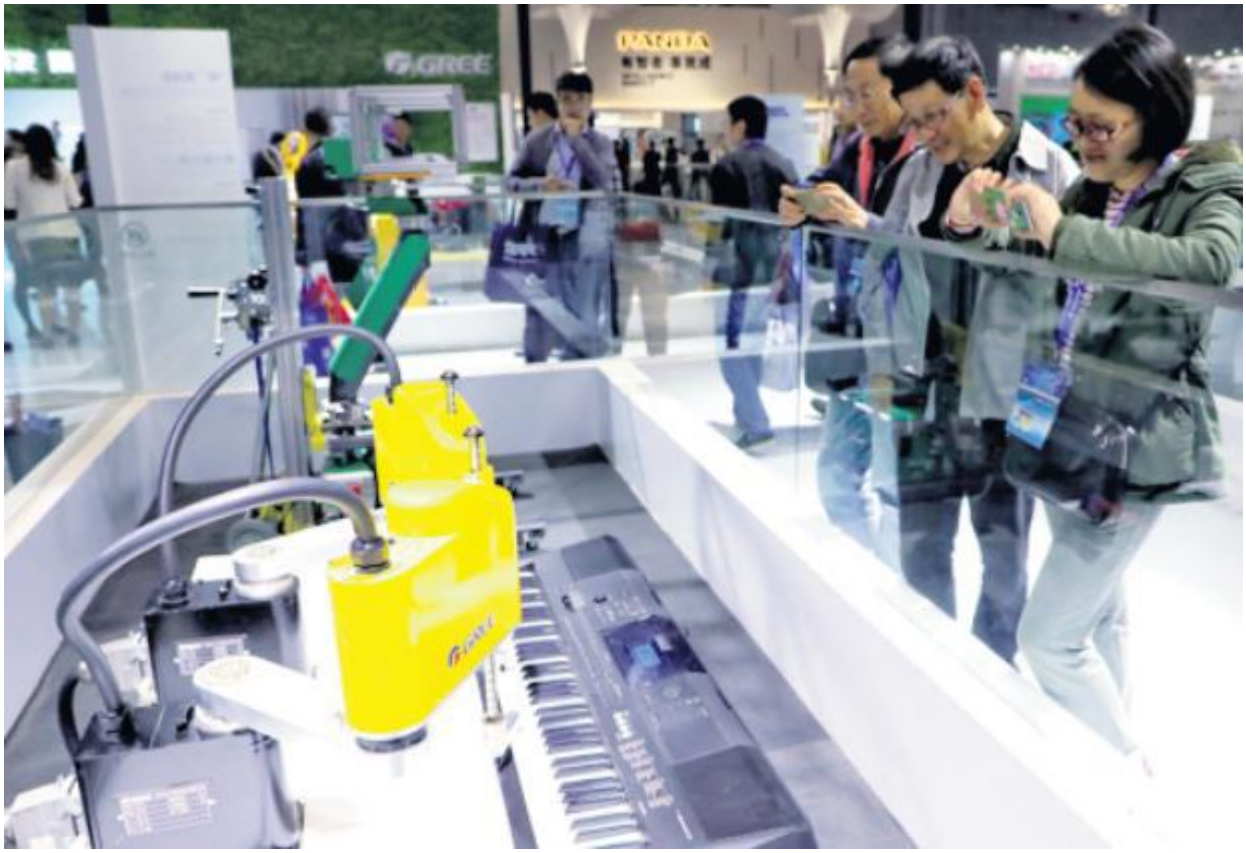
China plans to cut ineffective steel capacity of 30 million tons and coal capacity of 150 million tons in 2018, according to a government work report released earlier this month.

Ownership analysis showed that industrial output of state-holding enterprises was up 9 percent, while industrial output of enterprises funded by overseas investors increased 5.9 percent.

NBS data also showed that China's retail sales of consumer goods grew 9.7 percent year on year in the first two months, slightly slower than the 10.2-percent rise seen in 2017.

Fixed-asset investment grew 7.9 percent year on year during the period, up from 7.2 percent for the full year of 2017.

Home appliance maker embraces intelligent equipment



GREE, a major Chinese home appliance maker, is ramping up efforts in intelligent manufacturing by setting up unmanned factories and using industrial robots in a variety of production cycles, as part of its broader push to upgrade the country's manufacturing industry.

"We have eight manufacturing bases across the country, most of which are unmanned factories. China must master core technologies to grow into a manufacturing power," Dong Mingzhu, chairwoman and president of GREE, said on the sidelines of the annual sessions of the National People's Congress and the Chinese People's Political Consultative Conference.

Dong, who is a deputy to the NPC, said GREE entered into the intelligent equipment industry in 2013. The industry covers numerical control machines, industrial robots, servo-manipulators, intelligent storage equipment and intelligent detecting systems.

"We must stick to independent research and development, building our own talent pool and R&D team, as well as mastering core technology," Dong said. "Only in this way can we lead the industry and the world.

"That's what we're doing for Made in China 2025," she said, referring to the national plan to upgrade Chinese manufacturing. "That's our responsibility right now."

The industrial robots covered by the company's intellectual property rights have been applied in welding, spraying and transportation, greatly enhancing productivity and reduces labor costs, she said.

In an earlier interview, she said her company would concentrate on robots and precision machine tools as part of efforts to upgrade and transform Chinese manufacturing, as well as providing entirely self-developed high-end equipment for Made in China 2025.

GREE has independently filed more than 20 patents across over 100 types of automation products, such as intelligent automatic guided vehicles, industrial robots and manipulators for plastic injection machines, which are used to convey plastic products.

These products have been applied in fields including home appliances, new energy, food and energy saving.

Intelligent equipment has become an important business growth point for GREE. The company reported that revenue from its intelligent equipment business reached 962 million yuan ($152 million) in the first half of last year, up 27 times compared with the same period in 2016.

China has been the world's largest industrial robot market for four consecutive years, according to Wang Ruixiang, president of the China Machinery Industry Federation. Sales of industrial robots reached 89,000 units in 2016, and the figure is expected to rise to 150,000 by 2020.

"The huge market demand, sound industrial basis and favorable policy support have brought a rare opportunity for the development of intelligent equipment and manufacturing," Wang said. "We should focus on intelligent manufacturing to promote high-quality development, which has also become the choice of China's manufacturing industry."

The transformation and upgrading of China's manufacturing sector contributed to the development of the Chinese robot market, said Song Xiaogang, executive president and secretary-general of the China Robot Industry Alliance, adding that Gree has done good work focusing on the Chinese market.

3D-printed electric cars are on the way

Italy-based X Electrical Vehicle expects to launch its mass-producible 3D-printed LSEV electric cars in China beginning in the second quarter of next year, a senior designer of the company said in Shanghai on March 12.

The startup company, known as XEV, is exhibiting its first 3D-printed LSEV - low-speed electric vehicle - at Shanghai's China 3D-Printing Cultural Museum, a month ahead of its show at Auto China 2018 in Beijing, according to Guo Xiaozheng, a senior designer from XEV.

The vehicle will be available in the second quarter of 2019, and the XEV team will constantly improve the car according to market feedback, including offering customers tailor-made features from time to time, adds Guo.

By the end of this year, mass production of the vehicle will start. By using 3D-printing technologies, XEV has decreased the number of plastic parts and components in a car from more than 2,000 to 57, while research and development time will be shortened by two-thirds, says Zhu Li, director of the China 3D-Printing Cultural Museum.

Apart from the chassis, seats and glass, all the visible parts of the car are made with 3D-printing technology, reducing investment cost by more than 70 percent compared with a traditional vehicle, says Guo.

"The research and development process for a car normally takes between three to five years, but 3D-printed cars like the XEV only take between three and 12 months," says Luo Xiaofan, founder and CEO of Polymaker, a Shanghai-based technology company responsible for R&D of the materials for the 3D printed electric vehicle.

Believing 3D-printing technology will be a turning point for vehicle manufacturing, Ford launched 3D-printing labs as long ago as the 1980s, and its 3D printer at the company's Michigan plant can manufacture about 20,000 parts per year. Currently, Ford is exploring making large-scale one-piece auto parts, like spoilers.

In addition, 3D printing could bring other benefits for automotive production, including the ability to produce lighter parts that could enhance fuel efficiency.

For example, the XEV 3D-printed car weighs 450 kilograms, much less than similar-sized vehicles, which can weigh between 1 metric ton and 1.2 tons. This is thanks to the 3D printing material, says Luo.

Comau presents innovation during Laser World of Photonics China

Laser World of Photonics China, known as Asia's largest fair for the photonics industry, will take place from March 14 - 16 at the Shanghai New International Expo Center. Comau will present the product LHYTE (Laser HYbrid TEchnology) in Hall W3 Booth 3614 with strategic partner Convergent Photonics. Convergent Photonics offers photonics technologies, high power industrial laser solutions for material processing, and innovative solutions to the marketplace.

LHYTE, which is developed by Comau in collaboration with Prima Electro (a company of international importance in the design of electronic components and laser technologies), is a cutting-edge hybrid laser solution that combines a direct diode and fiber laser source within the same modular system.

The system is adaptable to any industrial application and enables Comau to meet the needs of a market in continuous evolution, in which manufacturers and system integrators are constantly in search of high-performance, versatile technologies.

"Our new laser source offers high flexibility to the customer due to the use of only one laser source for different laser applications such as cutting, welding and brazing," says Tobias Daniel, Comau Robotics and Automation Products Head of Sales and Marketing.

Robot maker plans expansion

Midea Group's robotic arm, in Germany, KUKA AG, will expand production capacity of robots and robotics systems in China, as the country's demand for the machines has been booming recently, according to a senior manager of the company.

"KUKA is working closely with Midea to look for business opportunities," said Wilfried Eberhardt, chief marketing officer of the company. "We will soon double the production capacity in China as the demand for robotics is increasing in the country."

The company's expansion plan was a move in accordance with a strategy of its parent company, which aims to promote the use of robotics in industrial and smart home appliances.

According to Eberhardt, the firm has started an expansion project in Shanghai, helping to double its capacity for robots and big systems.

In addition, the company will also increase its production capacity of a plant in Kunshan, Jiangsu province, for larger production of smaller systems.

Eberhardt said that KUKA's robots can be widely used in automotive, electronics, logistics, e-commerce, metal manufacturing and healthcare industries.

On March 15th, KUKA displayed a number of medical robots at the Appliance and Electronics World Expo in Shanghai.

KUKA's KBR Med robot components provide precision, flexibility, safety, responsiveness and other features that can be effectively applied in orthopedic surgery, ultrasonic diagnosis and minimally invasive surgery by integrating the capabilities of the most acclaimed robots in the field of medical technology.

"Collaborative robots will be handy for home use by Chinese families," Eberhardt said.

According to Olaf Gehrels, general manager of Midea Robotics Company, the robotic industry will reach a scale of 100 million units by 2025, of which the Chinese manufacturers are predicted to take 50 percent.

"We are bringing together sensors, vision and voice, navigation, grasping, force control and more into one single user experience that bridges all our product areas — we call this the new era of the human-robot interface," Gehrels said.

"We believe that robotics and motion control are the future, robots will become an important part of logistics, medical and healthcare and even smart home appliances," he added.

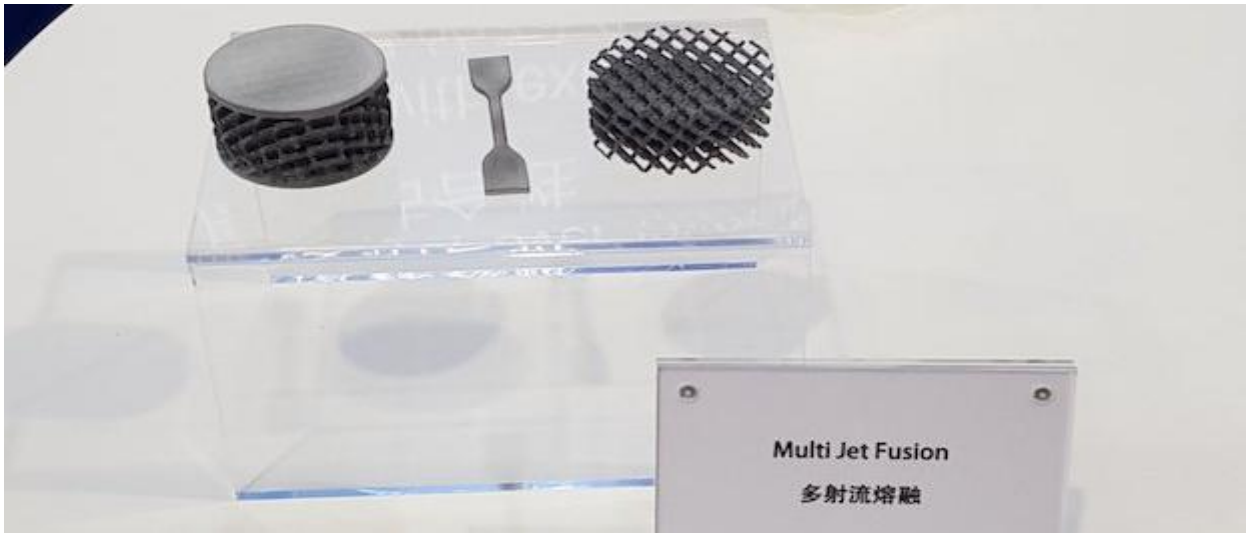
Toman wins the governor's attention of Jiangxi Province

On March 17th, vice governor of Jiangxi province Wu Xiaojun visit the visit to TOMAN and the research of "bearing cloud" construction, the Jiangxi provincial government deputy secretary general Chen Min, the Ministry of science and Technology Commission deputy director Liu Yu, deputy director of the office of Liu Qing, the company president Yu Zhaojie and other leaders accompanied the expedition.

During the visit, vice governor Wu Xiaojun in the accompanying President Yu Zhaojie walked into the workshop, inspected the TOMAN independent research and development of intelligent bearing equipment, AGV intelligent logistics distribution system, MES manufacturing management system, as well as the scene bearing cloud platform intelligent manufacturing product demonstration, listened to these applications and promote manufacturing enterprises to enhance the positive role the production efficiency, quality control and management level etc.. In the symposium, the president of Yu Zhaojie introduced the implementation of "100 enterprise promotion" in the bearing industry by the president of Yu Zhaojie, and the construction of the bearing cloud platform.

After hearing the report, vice governor Wu Xiaojun affirmed TOMAN's achievements in intelligent manufacturing, and hoped that TOMAN could cooperate with Jiangxi in the field of intelligent manufacturing to promote transformation and upgrading of Jiangxi's traditional manufacturing industry.

Lubrizol introduces first three 3D printing materials at TCT Asia



Lubrizol, a specialty chemicals company, has introduced its first three 3D printing material products after its entry into the additive market.

The Ohio-based company has followed the likes of BASF, SABIC, and Clariant into the industry to offer its expertise, particularly in the development of thermoplastic polyurethane (TPU) materials, to those pushing AM from a prototyping tool to a volume manufacturing one.

Though making the announcement at TCT Asia, Lubrizol was keen to emphasise the launch of its Estane TPU soft; flexible to hard; and rigid grades were merely the start. The three materials have been developed for extrusion-based processes, but the company is also targeting Selective Laser Sintering (SLS) and, as per its involvement with HP's Open Applications and Materials Program, Multi Jet Fusion (MJF).

"Following the recently-announced partnership with HP, Lubrizol continues to expand our presence within the fast-growing space of 3D Printing," commented David Pascual, Lubrizol Marketing Manager, in a company press release. "This event offers a great opportunity to further showcase our broad TPU portfolio aiming to serve all thermoplastic 3D printing technologies including FDM, SLS and MJF. "

Lubrizol is pulling all of its resources into the development of these materials, the new venture for the company was catalysed by industry players regularly enquiring about the availability of 3D printing materials. Those resources are the result of nearly 60 years' experience in the development of TPU materials. It has the technology to produce flame-retardant materials and conductive ones too, and is committed to

developing application-specific products in collaboration with OEMs, involving them in the development process to outline specifications and solve the problems at hand.

Pascual and Gert-Jan Nijhuis, the Director of Strategic Marketing, Engineered Materials, expressed their observation that there has been a lack of materials knowledge in the AM market, while on their stand at TCT Asia. As they roll out their first few products, Lubrizol is joining the host of other chemical companies now operating in the industry to put that right

Wedding expo expands online

China Wedding Expo, the world's largest wedding exposition in terms of scale and revenue, is expanding its online presence.

In March, when the expo held its first show in Tianjin, the event launched a subsidy of up to 10,000 yuan ($1,584) for buyers at the show who become app-registered members.

Members can get a subsidy of up to 3-10 percent off their entire bill if they can't come to the show and only appear on the app site.

The online subsidy will soon be available at later sessions of the expo in Wuhan, Shanghai, Guangzhou, Beijing and Hangzhou, beginning the third week in March, said Xiao Changhong, deputy secretary-general of the expo's organizing committee.

The annual revenue of the overall expo - which has exhibitions in Beijing, Shanghai, Tianjin, Hangzhou, Guangzhou and Wuhan - totals 10 billion yuan.

The online service is expected to account for 5 percent of the expo's revenue this year and to double next year, Xiao said.

In one way, this might seem like a bad time to get involved in the wedding business, as China is witnessing a downward trend in the number of marriages.

Statistics from the Ministry of Civil Affairs indicated that 10.59 million couples were married in 2017, down 9.44 percent year-on-year.

Of those who do seek marriage, however, the pursuit of a high-quality wedding is on an upward trajectory.

Chinese spending on weddings differs from region to region, but overall, spending on weddings and associated travel is seeing sustained growth.

In Beijing, for example, a new couple's spending, excluding apartment and car, averages from 230,000 yuan to 250,000 yuan, according to data from the expo.

In Tianjin, the price drops to 155,000 yuan to 170,000 yuan, but in Shanghai, the figure rises to 270,000-280,000 yuan, research indicates.

At wedding expos in Paris and Toronto, Xiao said, much of the promotional activity centers around travel, but in China, the wedding dress, banquet and other products - including cars - has traditionally accounted for the bulk of spending.

The expo now looks to make a foray into the overseas travel wedding sector as demand for wedding-related tourism is rising fast in cities including Beijing and Shanghai.